

Rayyan

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Technical Skills

Languages: Python, Java, JavaScript, TypeScript, C, HTML5, CSS3

Web & Full-Stack: React, Next.js, Node.js, Electron, Express, Tailwind CSS, REST APIs, MongoDB, Supabase, Firebase

Machine Learning & Data: PyTorch, scikit-learn, MNE, Pandas, NumPy, Matplotlib, Hugging Face

Tools: Git, Linux, llama.cpp, OpenRouter, FFmpeg/FFprobe, MLX Whisper, TrackPy, ImageJ/Fiji, PDF.js

Education

University of Massachusetts Amherst

Amherst, MA

B.S. in Computer Science, Commonwealth Honors College | GPA: 3.95/4.00

Expected May 2028

Coursework: Data Structures & Algorithms, Intro to Algorithms, Programming Methodology, Reasoning Under Uncertainty, C, Discrete Mathematics, Object-Oriented Programming, Linear Algebra, Multivariate Calculus, Intro to Research in the Discipline

Professional Experience

Machine Learning Research Intern | [Poster](#) | *Python, PyTorch, MNE, scikit-learn*

July 2026 – September 2026

UMass Amherst | Sarmistha Sarna Gomasta (PhD)

Amherst, MA / Remote

- Reduced participant-identification accuracy from a **98.3% handcrafted baseline to 39.2%** using stochastic 8D representations.
- Compressed EEG features from **64D to 8D**, improving motor-imagery classification accuracy from **50.1% to 54.1%**.
- Validated the pipeline on 2 EEG datasets, BCI Competition IV 2a and PhysioNet, with promising privacy-utility results in both.

Software Engineer Intern | *Python, LM Studio, FFmpeg, MLX Whisper*

May 2026 – July 2026

Myco | Web3 Video Streaming & Entertainment Platform

Karachi, Pakistan

- Enriched **20,000+ videos with 40+ attributes**, including content type, context, and genre, via a classification pipeline.
- Cut classification time to **100 videos in under 2 minutes** through end-to-end pipeline optimization and LLM benchmarking.
- Converted video tags into user-preference signals, powering personalized video recommendations across Myco's platform.

Research Intern | *Python, TrackPy, NumPy, Pandas, ImageJ/Fiji*

October 2025 – Present

Kandula Research Group | Manasa Kandula (PhD)

Amherst, MA

- Identified **4 six-particle structures**, including a previously unobserved active-system pattern, via connectivity graphs.
- Reduced particle-tracking time from **2 hours to 5 minutes** by automating detection and analysis across **30+ datasets**.
- Preprocessing trajectory data to compute pairwise-model error, training regression models to predict it from cluster topology.

Full Stack Developer Intern | *React, TypeScript, Express, Firebase, MongoDB*

January 2025 – April 2025

Astrik Digital | Software Development Agency

Karachi, Pakistan

- Diagnosed API failures, broken forms, and CRM issues across **15+ websites daily**, restoring lead-capture workflows.
- Modernized an internal food-ordering kiosk, rebuilding the legacy **C#** app into an employee-facing single-page application.
- Reduced kiosk load time from approximately **3 seconds to under 0.5 seconds** using responsive client-side navigation.

Projects

Folio | [GitHub](#) | [Video Demo](#) | *Electron, React, TypeScript, Node.js, PDF.js, llama.cpp, Tailwind CSS*

- Built a privacy-first, on-device AI reading assistant for research papers, increasing reader comprehension accuracy by **25%**.
- Delivered contextual explanations in **under 4 seconds** using quantized Gemma models and an 8,192-token context window.

Closure | **1st Place, Hack(H)er413** | [GitHub](#) | [Video Demo](#) | *React, Next.js, TypeScript, Supabase, OpenRouter*

- Engineered an AI-powered scheduling platform that syncs Google Calendar to assign employees to tasks by skill and availability.
- Achieved **~80% recommendation accuracy** against 30 labeled shift assignments while supporting **50+ employees**.

Campus Club Finder | [GitHub](#) | *React, Next.js, Tailwind CSS, Supabase*

- Developed a responsive platform enabling UMass students to discover and explore more than **50 campus clubs and organizations**.
- Implemented tag-based recommendations, persistent saved clubs, and filtering by category, meeting time, and commitment level.

Activities & Leadership

IT Student Ambassador

August 2026 – Present

UMass Amherst Information Technology

Amherst, MA

- Promote IT tools and resources to students via campus events and social media, testing services and relaying feedback to staff.

Volunteer Software Developer

February 2026 – Present

BuildUMass | Global Veterinary Fund (Nonprofit)

Amherst, MA

- Building a full-stack website with application forms, payment integration, an events system, and an authenticated admin panel.

Secretary

April 2026 – Present

UMass Pitch

Amherst, MA

- Maintain meeting records, communicate updates to members, and help coordinate rehearsals, performances, and club activities.

Awards

UMass Amherst Chancellor's Award — \$18,000/year merit scholarship | **Dean's List** — every semester